

REMARKS

The indication of allowability of claims 5 to 8, 20 and 22 is appreciated. Claims 5, 20 and 22 have been rewritten into independent form and are in good condition for allowance. Claims 6 to 8 depend on claim 5 and should be allowed for the same reason that claim 5 is allowable. It would be appreciated if claims 5 to 8, 20 and 22 were allowed in the next USPTO action.

Claims 10 to 17 have been withdrawn and cancelled in view of the USPTO restriction requirement.

Claims 1 to 4, 9, 18, 19 and 21 are pending and are rejected. Independent claims 1 and 18 have been amended to require the steps to be performed “automatically” and for the entire combustor. This amendment is supported by the application as originally filed at, for example, paragraphs 0017 to 19. Further, the original application discloses a flow chart of the algorithm executed by the controller and this also supports the automatic execution of steps recited in the amended claims.

The invention relates to automatic methods for scheduling a fuel split for a gas turbine combustor that compensates for a difference (error) between a scheduled turbine exhaust temperature and a target turbine exhaust temperature and converts the difference (error) into a NOx leveling fuel split adjustment that is automatically applied to adjust fuel flow to the combustor.

The rejection of claims 1 to 4, 9, 18, 19 and 21 as being anticipated by Davis et al (US Patent 6,810,655) is traversed.

Davis et al disclose a technique for adjusting, e.g., tuning, the fuel/air ratios in each of an array of combustion cans in a gas turbine combustors. The tuning adjustment relies on

temperature differences in the gas turbine exhaust (Davis, col. 8, lns. 55-65) to determine adjustments to be made to the fuel/air ratio of each combustion can (Davis, col. 9, lns. 4-7).

Davis et al do not teach compensating for differences between a scheduled gas turbine exhaust temperature and a target gas turbine exhaust temperature, or a technique for determining a fuel split for the entire combustor. Rather, Davis et al teach determining air/fuel adjustments to be made to individual combustion cans in a combustor based on actual temperature measurements.

The USPTO Action cites the manual processes disclosed in Davis et al (col. 5, lns. 55-62; col. 6, lns. 4-16). To make clear that the claimed invention is distinct from a manual process, the claims have been amended to require automatic steps. To the extent that Davis et al teaches manual steps, it teaches away from the claimed invention.

Davies et al do not disclose several of the steps claimed in this application including:

- “determining a target turbine exhaust temperature corresponding to a desired nitrogen oxide (NOx) at a reference fuel split.” (Claim 1) Davies et al do not teach determining a target turbine exhaust temperature. Davies et al teach away by disclosing directly measuring exhaust temperature profile using temperature sensors.
- “the target exhaust temperature is based on at least one parameter of a group of parameters consisting of specific humidity, compressor inlet pressure loss and turbine exhaust back pressure.” (Claims 2 and 18) Davies et al do not teach determining a target exhaust temperature based on humidity, compressor inlet pressure loss and back pressure.
- “automatically determining an exhaust temperature error based on a comparison between a scheduled turbine exhaust temperature and the target turbine exhaust temperature.” (Claims 1 and 18). The error determined in Davies et al is a difference between actual temperatures in the exhaust gas. Davis col. 8, lns. 55-65. Davies et al does not teach comparing an actual exhaust temperature to scheduled exhaust temperature.

- “automatically converting the exhaust temperature error to a projected NOx leveling fuel split adjustment for the entire combustor.” (Claims 1 and 18). Davies et al do not teach converting an error to a NOx leveling fuel split adjustment for the entire combustor.
- “automatically adjusting the reference fuel split for the entire combustor using the projected NOx leveling fuel split adjustment.” (Claim 1) Davies et al do not teach automatically adjusting a reference fuel split for the entire combustor.
- “automatically applying the adjusted fuel split to determine fuel flow to the entire combustor.” (Claim 1). Davies et al do not teach automatically applying a fuel split to the entire combustor.

The rejection of claims 1, 2, 4, 9, 18 and 21 as being anticipated by Keller et al (US Patent 5,539,638) is traversed.

Keller et al relates to a piston driven automobile engine and not to a gas turbine. It has no application to the present invention. Keller et al does not teach a method for determining fuel splits for a combustor in a gas turbine. Keller et al do not anticipate any claim of this application.

All claims are in good condition for allowance. If any small matter remains outstanding, the Examiner is requested to telephone the undersigned. Prompt reconsideration and allowance of this application is requested.

Respectfully submitted,

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